A proteomic based assessment on changes in myofirbrillar proteins of goat longissimus muscle as affected by heat treatments

Abstract

The present study examined the effect of different heat treatments; (1) chilled, (2) boiled at 100°C for 30 min, and (3) autoclaved at 121°C at 15 psi for 20 min, on the expression of goat skeletal muscle proteins using two-dimensional gel electrophoresis. The molecular weight (MW) and isoelectric point (pI) of heat stable proteins were characterised followed by identification of the proteins by MALDI-TOF/TOF mass spectrometry. There were 153 protein spots obtained in the boiled samples, while only 46 protein spots were observed in the autoclaved samples. Thirteen spots that exhibited high intensity of protein were chosen from the autoclaved sample for MALDI-TOF/TOF mass spectrometry analysis. The putative heat stable proteins identified were myosin light chain (MLC), actin, tropomyosin (TPM), troponin T (TnT), myoglobin, and creatine kinase. The Proc-GLM analysis revealed that the heat treatments have resulted in significant differences in spot intensities of actin, troponin T (TnT), myoglobin, and creatine kinase with no significant changes noted in other proteins.

Keyword: Goat meat; Heat treatments; Myofibrillar protein; 2-dimensional electrophoresis; MALDI-TOF/TOF